Università Tor Vergata, Roma

Ingegneria Civile e Ingegneria Informatica

GeoInformation PhD Curriculum

4th 2014 GeoInformation Seminar

DISP meeting room, Ingegneria dell'Informazione, 1 Via del Politecnico
10 April 2014, starting at **14:30**

Zina Mitraka

High spatial-resolution land surface temperature estimation over urban areas with uncertainty indices

Land Surface Temperature (LST) is a key variable for studying land surface processes and interactions with the atmosphere and it is a valuable source of information for a variety of topics in earth sciences. Detailed, frequent and accurate LST mapping is essential for urban climatology and Urban Heat Island (UHI) studies. Since no space borne instruments currently provide frequent thermal imagery at high spatial resolution, synergistic algorithms for LST retrieval are needed.

A method to derive LST at high spatial and temporal resolution has been developed which employs spatial-spectral unmixing techniques and combines spectral library information for emissivity estimation. The several difficulties in retrieving LST from space measurements, mainly related to temperature-emissivity coupling and to the atmospheric contribution to the thermal measurements, as well as to the measurements themselves, introduce uncertainties into the final product. A methodology using Monte-Carlo simulations to quantify the uncertainty of the final product has been also developed.

Zina Mitraka holds a degree in Applied Mathematics from the University of Crete, Greece, and a MSc in Environmental Engineering from the Technical University of Crete. She has been a trainee with the European Space Agency for two years. She has gained experience in research and development projects working for the Foundation for Research and Technology Hellas (FORTH) for over five years, in a wide range of topics mainly focusing on satellite thermal remote sensing.

Her scientific interests mainly concern the study of urban environment using multispectral and hyperspectral optical and thermal data with focus on algorithm development for biophysical parameters estimation and on the exploitation of Earth Observation data by numerical models.

Simone Peronaci

Design of ANNs algorithm for cloud mask and convective cells detection using SEVIRI data

MSG (Meteosat Second Generation) SEVIRI (Spinning Enhanced Visible and Infra-Red Imager) measures the electromagnetic radiation reflected or emitted from the Earth's atmosphere and surface in 11 spectral channels between 0.6 μm and 14 μm and one in a high spatial-resolution broad band visible channel every 15 min.

A first objective of the research is to design an algorithm able to classify clouds in an automatic way and to validate the results against the Cloud-Mask (CM) provided by EUMETSAT. A second step of the project is to work out a method to detect convective cells from MSG data exploiting the experience gained by CNMCA in developing the NEFODINA model.

Simone Peronaci received the Laurea Magistrale (M.Sc., summa cum laude) degree in Environmental Engineering from the Tor Vergata University, Rome, in February 2012. His thesis study concerned the implementation of an automatic land cover classification algorithm using Landsat images. Since November 2012 he has been a candidate enrolled in the Computer science, Control and GeoInformation Ph.D. Program at Tor Vergata University.

From July till November 2012 he has been with the GEO-K Company working on land cover mapping, using also SEVIRI images.

You are cordially invited to attend.